CLAIMS LISTING

CLAIMS

We claim:

Claims 1-24 (Canceled)

25. (Currently Amended) A method of one step synthesis of stable isotope labeled internal standards and [~~additional chemical~~] derivatizing reaction for the purpose of identification and quantification of carboxylic acid in an aqueous sample comprising the steps of:

a) synthesizing labeled carboxylic acid ester for use as labeled internal standard by reaction of an authentic sample of carboxylic acid with a labeled derivatizing reagent having at least one stable isotope atom;

b) combining a known amount of said labeled carboxylic acid ester internal standard with said sample comprising said carboxylic acid ;

c) contacting said resulting sample with a non labeled version of said labeled derivatizing reagent to convert said carboxylic acid in said sample into a carboxylic acid ester of identical structure as that of said carboxylic acid ester internal standard with the exception of the stable isotope atoms [~~and wherein there is no reaction of said labeled carboxylic acid ester with said derivatizing reagent~~];

d) extracting said sample to isolate said carboxylic acid ester and said labeled carboxylic acid ester internal standard; and

e) analyzing said carboxylic acid ester and said labeled carboxylic acid ester internal standard in

the extract by mass spectrometry to determine the concentration of said carboxylic acid in said sample.

26. (Canceled) The method of claim 25 wherein said mass spectrometric method is the mass spectrometric method using stable isotope labeled internal standard.

27. (Currently Amended) The method of claim 25 wherein said carboxylic acid [~~has~~] is a small molecular weight (less than 1000 atomic mass unit) carboxylic acid having the chemical formulas R_1COOH wherein R_1 is alkyl group or aryl group or heteroatom containing group or cyclic group or non-cyclic group.

28. (Currently Amended) The method of claim 25 wherein said labeled carboxylic acid ester [~~has~~] is a small molecular weight (less than 1000 atomic mass unit) carboxylic acid ester having the chemical formulas $R_1COO\ R_2$ wherein R_1 is alkyl group or aryl group or heteroatom containing group or cyclic group or non-cyclic group and R_2 is a labeled alkyl group having at least one stable isotope atom.

29. (Previously Amended) The method of claim 25 wherein said labeled derivatizing reagent is a labeled alcohol R_2OH wherein R_2 is a labeled alkyl group having at least one stable isotope atom and said non labeled derivatizing reagent is the same alcohol R_2OH except that R_2 contains no stable isotope atom and the derivatization reaction is performed in the presence of a chloroformate and a base.

30. (Original) The method of claim 29 wherein said stable isotope labeled alkyl group R_2 is CD_3 wherein said carboxylic acid is reacted with a chloroformate and a labeled methanol, or with a base and a labeled methyl iodide.

31. (Previously Amended) The method of claim 29 wherein said stable isotope labeled alkyl group R_2 includes CD_3, CD_2CD_3, and $CD_2C_6D_5$.

32. (Original) The method of claim 29 wherein said stable isotope labeled alkyl group R_2 is $CD_2C_6D_5$ wherein said carboxylic acid is reacted with a base and a labeled benzyl chloride.

33. (Previously Amended) The method of claim 25 wherein said extraction step d) can be any appropriate separating methods such as solid phase extraction, liquid-liquid extraction or solid supported liquid-liquid extraction.

34. (Previously Amended) The method of claim 29 wherein said non labeled alcohol R_2OH is selected from a group consisting of methanol, benzyl alcohol, and ethanol.

35. (Previously Amended) The method of claim 29 wherein said chloroformate is selected from a group consisting of isobutyl chloroformate, methyl chloroformate, and ethyl chloroformate.

36. (Original) The method of claim 25 wherein said alkyl halide is selected from a group consisting of methyl iodide, ethyl iodide, and benzyl chloride.

37. (Previously Amended) The method of claim 29 wherein said base is selected from a group consisting of sodium hydroxide, sodium carbonate, pyridine and triethylamine.

38. (Previously Amended) The method of claim 25 wherein said sample contains either a singularity or a plurality of carboxylic acids.

39. (Previously Amended) The method of claim 25 wherein more than one carboxylic acids in said sample can be converted to carboxylic acid esters using a single derivatizing reagent.

40. (Previously Amended) The method of claim 25 wherein more than one labeled carboxylic acid ester internal standards can be synthesized using a single labeled derivatizing reagent.

41. (Canceled) The method of claim 25 wherein there is no conversion of said stable isotope labeled carboxylic acid ester internal standard to its corresponding non-labeled carboxylic acid ester compound during step b).

42. (Previously Amended) The method of claim 25 wherein said additional reaction step c) is performed in an aqueous environment.

43. (Canceled) The method of claim 25 wherein said converting step b) is performed before said extraction step.

44. (Canceled) The method of claim 25 wherein said reaction to form labeled carboxylic acid ester internal standards and additional reaction to form carboxylic acid esters are quantitative meaning all carboxylic acids are completely transformed into carboxylic acid esters .

45. (Currently Amended) The method of claim 25 wherein said stable isotope atom [includes] is selected from a group consisting of deuterium, carbon-13, nitrogen-15, and oxygen-18.